

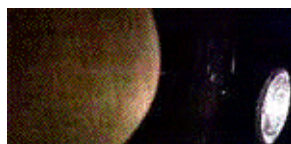
part

Matter Earth Cells Heredity Classify

Sometimes as we look at the world around us, movement is seen without any evidence of why it happens. Consider the following and propose your hypothesis of what causes each.

Have you laid on your back and watched clouds moving in the air above you? Did you observe anything pushing these clouds? Have you ever wondered what makes the clouds move through the sky?

Now shine a flashlight in a dark room and ask yourself each of the following questions?



Do you see small particles in the air?

Are any of these particles moving?

What could make a dust particle move?



Now try an activity to observe the motion of particles of matter using food coloring and water. **Before you begin**, make a hypothesis to predict how much time it will take for the water to become equally colored.

Safety concerns:



Be sure to keep all Chemical, Heat, and Glassware Safety Rules that are specified by your teacher and in all general laboratory experiences.



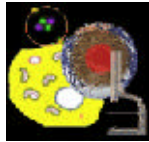
Now place one drop of food coloring into a container of water. Observe the motion of the food coloring in the water. Time how long it takes for the entire container to completely become the same color. How long did it take for the color to disperse (spread out equally)? How did this time compare to your hypothesis? What do you think is causing this motion? Repeat the experiment with the food coloring and another glass of water. This time use water of different temperatures. Try very hot and very cold water. First remember to make your hypothesis about which will mix fastest? Is there a difference in how fast the food coloring mixes into the water? Observe the motion of the particles in the water. What causes the change in motion?

If you want to observe how the food coloring reacts without doing this at home, quicktime movies have been made to show the results. **To view these movies, drag your mouse over each link (you do not need to click it). The movies will open in a new browser window. Close the window to again navigate on this page.** First we have food coloring placed in [heated water](#) (736 K Quicktime), then in [stirred water](#) (556 K Quicktime), and finally in [still water](#) (156 K animated GIF).

To explore how scientists have learned about the particulate nature of matter, visit the following sites:

- Visit "The Atom's Family - [Phantom's portrait parlor](#)" - The section "[Phases of Matter](#)" has a fun way to compare how temperature changes the particle motion of solids, liquids and gases.
- Remember the Eureka animation videos. These have good illustrations of how particle motion changes the properties of solids, liquids and gases. You may want to use the following video segments: "molecules in solids" (16) "molecules in liquids" (17) "expansion and contraction" (18) "evaporation and condensation" (19) "measuring temperature" (20) "temperature vs heat" (21). Visit [Utah's Instructional Support Services](#) webpage to find out how current copyright applies to your use of this series in the state of Utah. Instructional Support can also inform you how you may obtain a copy of the program for use in your classroom.

Extension - [The Particle Adventure](#). Here you will see experimental evidence of the particulate nature of matter. The MOVIE is great. The site includes classroom activities. (Be warned that many activities get deep into physics. If the math gets too difficult, remember to return to sci-ber text!)



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Visit the [Utah State 7th Grade Integrated Science Core Curriculum Page](#).

Updated June 14, 2000 by: [Glen Westbroek](#)

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